

Challenge, Engagement, and Rigor: Developing Expertise Through Curriculum

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An Open Door....



is a passage to
a desired goal,
a better life, or
the great
unknown.....

A Closed Door....



hides a mystery,
blocks a view, or
kills a dream.

Each of us has encountered a closed door...



so we knock on
doors, we pound on
doors, and we look
through the keyhole
to see what is on the
other side.

Our curiosity demands it.



This is our human nature and at this conference we celebrate and advocate this desire for young people to experience open doors to their education.

To serve our students well...



It starts with an open heart, open head, and open eyes to help see the potential of our students for success, and the potential that disciplinary ideas/concepts hold for designing curriculum that has student relevance.

Most learners need curriculum and instruction that demonstrates to them the power of ideas and their individual power as learners.



Curriculum That Can Open Doors



..emerges not from a list of names, dates, facts, and terms, but from a longing that springs from a connection or a need to make one. Our teaching was turned on its head by reading Phil Phenix's(1964) ideas about asking the big questions. Phenix said that once human beings evolved to a point when they no longer had to spend all their time building fires and slaying dinner, they began to see answers to a single question. We are born-and we die-asking, "What is life, and who am I in it?" Human beings developed the disciplines of history, the arts, English, science, and math to answer that question.

Four curricular practices that open doors for discovering and developing potential...



1. Hunt for big ideas embedded in the lists of content that often parade as curriculum.

**So what is a big idea?
Where do they come from?
How do we connect the topics we teach to these disciplinary concepts?**

It's Worthwhile to return to the historical underpinnings of an idea.....



Jerome Bruner

- In 1959, at Woods Hole on Cape Cod, a group of 35 scientists, scholars and educators met with the purpose of discussing how to improve science education, to “examine the fundamental processes involved in imparting to students a sense of the substance and method of science.” The meeting was sponsored by the National Academy of Sciences and over the course of the ten day meeting, several important themes emerged that were to have major implications not only for science education, but for education in general. Jerome Bruner’s book, *The Process of Education*, was written to provide an account of the major themes and conclusions that emerged from that conference. While the entire book is worth reading, the chapter on the importance of structure speaks most directly to the development of curriculum.

Refers to the importance of presenting the basic structures of the disciplines as the focal points of curricula.

THE THEME OF STRUCTURE

Basic *STRUCTURES* consist of essential concepts and the relationships between them.

- Supply and Demand-Economics
- Conflict-History
- Energy-Physics

Such concepts, when understood, enable students to understand many of the phenomena in that discipline and similar phenomena that may be encountered elsewhere. As time goes by, students return again and again to the basic concepts, building on them, making them more complex, and understanding them more fully.

Representative ideas are clearly of great importance in economizing learning effort. If there are certain characteristic concepts of a discipline that represent it, then a thorough understanding of these ideas is equivalent to a knowledge of the entire discipline. If knowledge within a discipline is organized according to certain patterns, then a full comprehension of those patterns goes far toward making intelligible the host of particular elements that fit into the design of the subject. (p. 323)



Phenix, P. (1964). *Realms of meaning*. New York: McGraw-Hill.

Core Ideas Become Deeper

Disciplines have certain structural elements—core ideas and approaches to knowledge and understanding—that should guide curriculum development in a manner that connects to the development of the child.

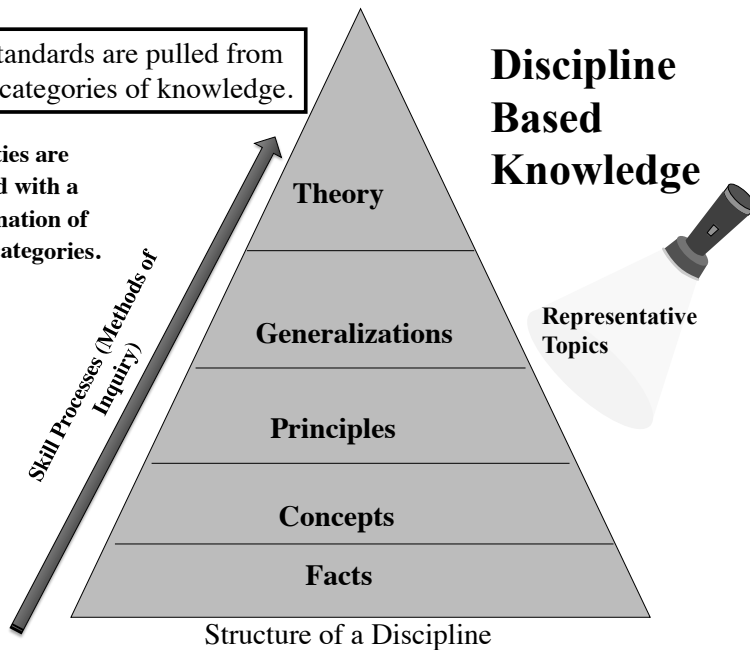
- “Any subject can be taught effectively in some intellectually honest form to any child at any stage of development” (Bruner, 1960, p. 33).
- *Bruner developed the concept of a spiral curriculum that returns to the same subject matter at periodic points in time, but at each “spiral” the material is substantially deeper in its intellectual demands.*

Sound Familiar??

- As Bruner explains the problem is twofold:
 1. First, how to have the basic subjects rewritten and their teaching materials revamped in such a way that the pervading and powerful ideas and attitudes relating to them are given a central role;
 2. How to match the levels of these materials to the capacities of students of different abilities at different grades in school (Bruner, 1960, p. 18).

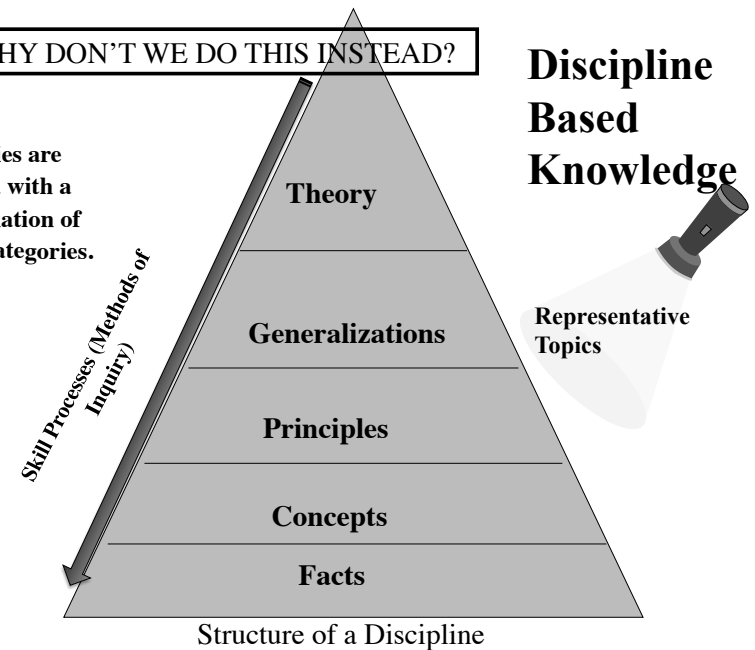
Our standards are pulled from these categories of knowledge.

Activities are created with a combination of these categories.



SO WHY DON'T WE DO THIS INSTEAD?

Activities are created with a combination of these categories.



Selecting Big Ideas

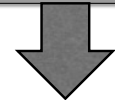
Choosing the big ideas to focus on requires figuring out what **principles and concepts** are key to a given subject and how curriculum decisions might be made with these in mind.

“If you were an English teacher, and you could only teach one story, one novel, or one piece of literature that had to represent, in some fashion, the window to the world of literature for your students, which would you choose? Would it be King Lear? Would it be Romeo and Juliet? Would it be one of Arthur Miller’s plays? Would it be a Faulkner short story? Would it be Tolstoy’s War and Peace? And why? And what would you ask students to do with the piece of literature?”

- These questions could be applied to all subject areas as teachers wrestle with the big ideas in their discipline.

Concepts

serves as “integrating lens” and encourages the transfer of ideas within and across the disciplines “as students search for patterns and connections in the creation of new knowledge.”



MACROCONCEPTS

Broadest, most abstract concepts; often used as a conceptual lens to develop breath of understanding (systems, structure, interdependence, change, conflict, power, balance).

MICROCONCEPTS

Sub-concepts, more specific concepts tied to a discipline (slope, value, niche, value)

Moving from Topics to Concepts

Topic

- concrete
- just “is”
- “dead-ends”
- tangible/see-able
- fits under a concept

Concept

- abstract
- represented by 1 or 2 words
- transferable within/across disciplines
- used to mentally organize content
- “unpackable”

Rocks
Dinosaurs
Clouds

Structure & Composition
Adaptation
System

_____, a study in _____.

Topic/Skill

Concept/Big Idea

Plants, a study in Cycles.

Hatchet, a study in Survival.

Poetry, a study in Voice.

Government, a study in Roles/Responsibilities

Westward Movement & Immigration, a study in why & how people move.

LIST OF CONCEPTS FOR FRAMING CURRICULUM UNITS

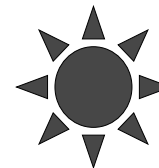
<u>General</u>	Humanness	Adaptation	Operation
Altruism	Ideals	Conclusion	Permutation
Analysis	Identity	Conservation	Prediction
Approximation	Independence	Element	Prime/Composite
Balance	Interaction	Energy	Probability
Behavior	Interdependence	Equilibrium	Representations
Beliefs	Justice	Experiment	Rules
Bias	Love	Force	Scale
Bravery	Memory	Habitat	Symmetry
Censorship	Moderation	Hypothesis	Time
Change	Mortality & Immortality	Matter	Variable
Choice	Organization	Motion	
Conflict	Patterns	Observation	<u>Social Studies</u>
Commitment	Perseverance	Population	Autonomy
Communication	Perspective	Principle	Chronology
Compromise	Philosophy	Sustainability	Citizenship
Continuity	Power	Taxonomy	Community
Contribution	Progress		Competition
Conviction	Regulation	<u>Math</u>	Culture
Cooperation	Relativity	Algorithm	Democracy
Criticism	Relationships	Correlation	Demographics
Cycles	Revolution	Derivative	Direction
Discovery	Rules	Generalizations	Equality
Diversity	Society	Efficiency	Exploration
Economy	Stability	Elegance	Fact/Fiction
Environment	Symbol	Equation	Freedom
Ethics	System	Factor	Government
Evaluation	Theory	Formula	Globalization
Evolution	Time	Function	Investment
Family	Transmutation	Infinity	Leadership
Fear	Victim	Label	Location
Habit		Linearity	Needs & Wants
Hierarchy		Measurement	Patriotism
Humanity	<u>Science</u>	Number	Place

LIST OF CONCEPTS FOR FRAMING CURRICULUM UNITS

Preservation	Delivery	Harmony	Offense/Defense
Production/Consumption	Interpretation	Interpretation	Position
Reform/Reformation	Memorization	Melody	Strategy
Rights & Responsibilities	Mood	Performance	Space
Ritual	Performance	Repetition	Strategy
Subjugation	Presence	Rhythm	Teamwork
Supply/Demand	Rehearsal	Technique	
	Stage/Staging	Tone	<u>Technology</u>
	Set		Access
<u>English</u>		<u>Art</u>	Algorithm
Characterization		Abstraction	Efficiency
Composition	<u>Foreign Language</u>	Aesthetics	Hardware/Software
Conventions	Attitude	Color	Input/Output
Fate	Code	Composition	Interface
Fluency	Comprehension	Creativity	Storage
Genre	Connotation/Denotation	Expression	System
Heroism	Conjugation	Form	Tool
Irony	Context	Materials	Utility
Loyalty	Conventions	Medium	Universality
Metaphor	Custom	Metaphor	
Myth	Delivery	Process	
Narrative	Fluency	Representation	
Persuasion	Interpretation		<u>Physical Education</u>
Roles	Language		Competition
Rules	Message		Discipline
Story	Pronunciation		Effort
Style	Rules		Energy
Symbol	Semantics		Exercise
Theme	Structure		Fitness
Voice	Translation		Form
<u>Drama</u>		<u>Music</u>	Leadership
Audience		Composition	Nutrition
Character		Dissonance	Movement
Connotation/Denotation		Discipline	

Topics vs. Concepts

Ancient Rome, a study in....CULTURAL IDENTITY
 Order of operations, a study in ...PROCEDURE, ALGORITHM, EFFICIENCY
 U.S. Constitution, a study in...STRUCTURE, ROLES & RESPONSIBILITIES,
 INTERDEPENDENCE
 Macbeth, a study in...POWER & AMBITION
 Fractions, a study in...RELATIONSHIPS, PROPORTIONALITY
 Periodic Table of the Elements, a study in...INTERACTIONS, PREDICTION
 Cells, a study in...SYSTEMS, STRUCTURE & FUNCTION
 Strength training, a study in...DISCIPLINE, FORM
 Biographies, a study in....CHRONICLING A LIFE, CAUSE & EFFECT
 USDA Food Pyramid, a study in BALANCE, MODERATION



Generalizations

Relates two or more concepts
Transfer to other situations
Transfers across culture
Transfer through time

Generalizations are statements of conceptual relationships that transfer across disciplines. They must continually be tested for truth.

Change in one area is affected by and leads to changes in other areas (human settlement, character development in novels, topology, perspectives in art , and inventions.

Change can lead to conflict if compromise is not made.

Systems are made up of parts which carry out certain functions. Each part may serve a particular purpose.

“Understand” Objectives/Principles

- Essential “**truths**” that give meaning to the topic.
- Represent a **big idea** having lasting value beyond the classroom
- Answer the questions, “**So what?**” “Why are we learning this?”
- **FULL SENTENCE insights** we want students to walk away with (Helpful to start with, “Students will understand *that...*”)

Examples: Students will understand *that...*

- ...multiplication is another way to do addition.
- ...people migrate to meet basic needs.
- ...all cultures contain the same elements.
- ...voice reflects the author’s perspective & background.

Based on Tomlinson, 2003 and Wiggins & McTighe, 1998

Examples of Enduring Understandings/Principles

- A successful democracy depends on the participation of its citizens.
- Every individual deserves just and reasoned treatment.
- The ability to create and interpret maps allows us to move through the world effectively.
- We can control, to some degree, how weather impacts us as individuals and as societies.
- The author’s messages in a story are rarely explicit; the reader must read between the lines.
- Switching from one graphic representation to another can reveal new information about a relationship.
- Effective readers use many strategies to help them understand what they read (e.g., using context clues, questioning the text).

Concepts or big ideas are meant to..

help shape the great questions that want to be answered in each of us. We almost can’t help but attend when those questions are raised. *To teach is to help our students raise questions they care about and to set out together to look for answers.*



Essential Questions

The great questions want to be answered in each of us. We almost can’t help but attend when those questions are raised. *To teach is to help our students raise questions they care about and to set out together to look for answers.*

- are **arguable** - and *important* to argue about?
- are at the **heart** of the subject?
- recur - and *should* recur - in professional work, adult life, as well as in classroom inquiry?
- **raise more questions** – provoking and sustaining engaged inquiry?
- often **raise** important conceptual or philosophical **issues**?
- can provide **organizing purpose** for meaningful & connected learning?

Humanity vs. Inhumanity

Factual Questions:

1. Why was the Holocaust a significant event in world history?
2. What beliefs did Hitler hold that drove his actions?
3. Why is Hitler's persecutions of the Jewish people considered inhuman?

Conceptual Questions:

1. What examples of inhumanity can you cite from our world today?
2. What acts of humanity can you cite from our present day world?
3. How are beliefs, values, and perspectives related to views of humanity and inhumanity?

Essential Question: Can one be inhuman and civilized at the same time?

“Knowledge” Objectives

Facts, events, people, rules, names, terms, discrete information, algorithms, dates, definitions, labels, or ideas.

Info. that “ends”.

- The Declaration of Independence was signed on July 4, 1776.
- State capitals
- Comma rules
- Strategies for covering bunts
- Types of graphs
- Biographical details on Napoleon
- Characteristics of Impressionist art
- Parts of a cell
- Order of operations
- Persuasive speaking techniques
- Rules of basketball
- Vocabulary for Chapter 9
- Proper format for lab notebook
- The order of operations
- Music scales

“Skills” (Be Able to Do) Objectives

Thinking skills, skills of the discipline, habits of mind, procedural skills, organizational skills. **Verb phrases--not the whole activity.**

- Discern bias among news sources.
- Design a routine for public performance
- Create a self-portrait
- Identify sources using a database.
- Factor whole numbers into primes.
- Justify a position.
- Compose a variation on a theme.
- Form a plausible hypothesis
- Contribute to the success of a group or team
- Revise written work for clarity.
- Analyze the author's argument.
- Plan a fitness regimen.
- Predict the outcome of an experiment
- Compare map projections.

The Structure of the Disciplines

The structure of the disciplines—ways of organizing key ideas and differing ways of posing and answering questions—should inform the overall curriculum. Ask yourself these questions:

1. *What are the properties of an activity, task, or project that will lead to the greatest teaching and learning?*
2. *What is the organization of ideas that would make it most coherent, understandable, learnable, and transferable by a student?*
3. *How does one match the activity with students' interests and abilities?*

If teachers' decisions about instruction are informed by an understanding of the underlying principles of their subject, they can build a bridge between the material and their students.

Connecting with Students

Connections with students drive the opening of doors. It's far more fulfilling to listen for and respond to the multiple rhythms that students bring into the classroom than to see students as essentially interchangeable and unknowable. Students need connections to learn---and so do teachers.

Instruction is about connecting content with human beings, sharing ideas that matter with people who matter.

Studying the Background of Arthur Miller's *The Crucible*

A WebQuest for 11th Grade English/Language Arts Classes

Designed by

[April M. Moore](#)

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[Introduction](#) | [Task](#) | [Process](#) | [Evaluation](#) | [Conclusion](#) | [Credits](#) | [Teacher Page](#)

All students are *cheaters*-- Never trust them with anything

Have you ever been falsely accused? It doesn't feel very good. Take a look at the pictures below; then click to read a poem [Japanese Internment Camps](#) (after reading the poem, return to this page).



The Task

Arthur Miller's *The Crucible*, in the context of the historical Salem Witch Trials, shows many innocent people being accused of crimes/sins they did not commit. Throughout history, society has been blinded to similar occurrences, or "witch hunts." Indeed, Miller wrote *The Crucible* in response to one of those "witch hunts" that took place in his time period--McCarthyism.

The Question:

What should be done to keep the innocent from being accused and presumed guilty?

Your job, in a group of 3 (or 4) students, is to research the background of the Salem Witch Trials, McCarthyism, and other "witch hunts" throughout history to find their causes, evaluate their consequences, and develop a solution that would help avoid and/or prevent such "witch hunts" in the future.

You will be creating a letter to the editor of a newspaper telling what society should do to prevent innocent people from being accused and presumed guilty in the future.

Four curricular practices that open doors for discovering and developing potential...



2. We must share these big ideas with our students and invite them to hunt for more or better ideas with us by using the tools of the ologist.

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The great questions want to be answered in each of us. We almost can't help but attend when those questions are raised. ***To teach is to help our students raise questions they care about and to set out together to look for answers.***

Let's Watch a Movie...



Dan asks students to explore the concepts of objectivity and subjectivity as they learn to discern the difference between documentary photography and photographic art. The concepts are studied in this lesson so that students learn how practicing professionals in history study both how documentary photographs both reflect reality (which is objective) and shape our understanding of reality (subjective). Since its earliest existence, documentary photography has been a practice of balancing the subjective and objective.

Four curricular practices that open doors for discovering and developing potential...



3. We must design curriculum that invites generativity of thought. Some students will be finished learning at the end of our units, others will not. So why not provide opportunities for students to co-write the curriculum.



Four curricular practices that open doors for discovering and developing potential...



4. Curriculum is about connecting content with human beings, sharing ideas that matter with people who matter, and helping individuals seek relevance.

Curriculum designed around big ideas helps...

1. Kindergarteners see that a change in their lives is something like a change in the weather or the change that happens in a story.
2. 1st graders answer the question, "What is a true friend" when they read Frog and Toad are Friends, and answer it years later reading A Separate Peace in high school, and yet again when they study international relations in college.
3. Lifts the concept of witch hunt from the pages of The Crucible to the study of American history to the evening news, to the school cafeteria, and to the dark corners of our own minds.

And Does Not Neglect the details of content. It helps students see a reason for these details and makes them memorable, useful, and transferable.

Poetry: Voice, Identity, Perspectives



Garrett's Poem

- People develop an identity throughout their lives.
- Our identities matter to us.
- Our identities are shaped by intentional acts and chance occurrences.
- Writers' explore the identities of characters to help readers explore their own identities. Writers' voices reveal much about their identities.
- Voice reflects culture, personality, time, and opinions of the writer.
- Voice is influenced by and influences literary form.

Garrett R., a middle school student at New Line Learning Schools, wrote this poem to describe his experience as a victim of bullying. After reading this poem in public, he received a standing ovation from his class, and the bullying ceased.



The RULER Approach to Social and Emotional Learning, Yale University



These teachers open the door for their students to use curriculum as a vehicle to explore the wonderment of ideas and to make contributions that are relevant to them.
How is your curriculum designed?

Concept: Cultural Identity
Topic: Ancient Egypt

UNDERSTANDINGS

A culture's identity is marked by its shared knowledge, art, customs, habits, values, beliefs, symbols, accomplishments and perceptions of its people. The pyramids reveal key elements of Ancient Egyptian cultural identity.

KNOWLEDGE

The major features of pyramids
Popular theories about how the pyramids were built
Facts about Egyptian burial customs
Tenets of ancient Egyptians' religious beliefs

SKILLS

Formulate hypotheses.
Compare prior knowledge with new knowledge.
Use deductive and inductive reasoning.
Make observations.



Jessica Hersholt, 2008

Concept: Change
Topic: Linear Equations & Inequalities

UNDERSTANDINGS

Change in one thing is usually dependent on another thing.
Slope analyzes rate of change.
The cardinality of slope depends on how quickly change occurs.

KNOWLEDGE

The difference b/w. variable and constant change
The difference b/w. independent and dependent variables
Definition of slope and ways to calculate it
Slope-intercept and other formulas related to graphing data.

SKILLS

Represent change in multiple formats.
Analyze change as a constant or variable.
Distinguish between dependent & independent variables.
Draw and use regression lines to make predictions.

Nancy Smith, 2003

Concept: Persuasion
Skill: Essay Writing

UNDERSTANDINGS

Effective persuasion builds a logical case with credible supporting evidence.
Effective persuasion anticipates the audience's objections.
Effective persuasion motivates a change in people's behavior, thinking, or feelings.

KNOWLEDGE

Characteristics of effective persuasion
Types of logical fallacies
Ways to organize a persuasive argument

SKILLS

Write to persuade.
Research an issue.
Compose arguments to support points of view with relevant details from single and multiple texts.
Recognize & refute inconsistent arguments.
Identify further lines of inquiry suggested by a persuasive argument.

Jessica Hersholt, 2008

Concept: Narrative
Topic: Memoir

Understandings

Memoir is a window into a life.
Memoirists selectively and intentionally omit and include particular memories in order to present their version of "truth".
Memoirists often use thematic strategies that are similar to those of fiction writers.

Knowledge

The definition of memoir
Attributes of and patterns & devices used in memoir-writing

Skills

Explain how memoir is different from fiction and from autobiography.
Distinguish characteristics of memoir.
Select appropriate topics and themes for own memoir.
Apply techniques of memoir writing.

Katharine Thomas, Director, BJ Public School District 34

Concepts: Efficiency & Decomposition
Skill: Factoring Numbers

Understandings

Expressing a number as a product of prime numbers
[FACTORING] is tool for solving mathematical problems more simply and quickly.
Factoring numbers is a logical process of breaking numbers down into a product of simple parts.

Knowledge

Terms: prime number, composite number, factorization
Strategies for prime factorization
Rules of divisibility

Skills

Factor whole numbers into primes using various strategies
(Louisiana STATE STANDARD)

Jessica Hersholt, 2007

Concepts: Story, Perspective
Novel: *The Things They Carried*

Essential Question: Does truth matter in storytelling?

Understandings

Thematic understanding
Story is a way of making sense of and reconstructing the past.
Literary understanding
Exploring multiple perspectives on the same event grants an author freedom to explore the truth, and a reader permission to approximate the truth.

Skills

Using vignettes and short stories to construct and cohere a larger narrative
Analyzing a author's decision-making process
Reflecting on one's own decision-making process in writers
Analyzing narrative structure
Evaluating and defending beliefs about truth in storytelling

Jessica Hersholt, 2008

Concepts: Identity & Status:
Topic: *The Chocolate War* (novel)

Understandings

Thematic understandings:

- Our personal identities are influenced by our perceptions of and values about our status in a group.
- Placing too much value on status in a group can lead to foolish decisions.

Literary understandings:

- The more complex a character, the more challenging it is for the reader to determine the character's motives.

Knowledge

Concepts: Identity, status

- Differences between simple and complex characters
- Strategies for determining character motive.

Skills

- Analyze a character's decisions to determine his motives.
- Connect personal beliefs and actions to those of a character.
- Interpret theme.

Jessica Huchard, 2008

Concept: Self-Understanding:
Topic: Careers

Understandings

- Personality, preferences, values, strengths, and interests all play a role in choosing and pursuing a career that is a good fit.
- Career exploration is a tool for better understanding self.

Knowledge

- Career possibilities
- Necessary education, training, and skills for a career of choice

Skills

- Assess personality, preferences, values, strengths, and interests
- Analyze the alignment between personal characteristics and career possibilities.
- Research a career in-depth
- Discern what skills, training, and education are required for a career.
- Synthesize personal characteristics and experiences to justify being qualified for a particular job.

Jessica Huchard, 2008

Nutrition

Understandings

- A balanced diet contributes to physical and mental health. Poor nutrition leads to a variety of health problems.
- Healthful eating requires an individual to act on available information about nutritious diets, even if it means breaking comfortable habits.
- Government agencies provide relative guidelines for nutrition, but dietary requirements vary for individuals based on age, activity level, weight, and overall health.

Knowledge

- Key nutrition terms (protein, fat, calorie, carbohydrate, cholesterol)
- Types of food in each food group and their nutritional value
- USDA food pyramid guidelines
- Variables that influence nutritional needs
- Specific health problems caused by poor nutrition

Skills

- Read and interpret information on food labels.
- Analyze diets for nutritional value.
- Plan balanced diets for themselves and others.
- Develop a personal action plan for healthful eating.

Tomlinson & McTigue, 2006

Personal Style (Art)

UNDERSTANDINGS

- Each artist has a personal style.
- Personal style reflects the individual's culture, time, and personal experiences.
- Use of materials and style are related.

KNOWLEDGE

- Characteristics of self-portrait as genre
- Appropriate use of art materials
- Principles of design
- Definition of artistic expression

SKILLS

- Analyze an artist's personal style and use of materials
- Create a facsimile of an artist's personal style and use of materials

Adapted from Jean Carlini Schilling, Lucene Lewis, Stephen Rhoads, Kathleen Steiner

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